

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI**

JABATAN TEKNOLOGI KIMIA DAN MAKANAN

PEPERIKSAAN AKHIR

SESI I : 2022/2023

DMT20043: ORGANIC CHEMISTRY

TARIKH : 19 DISEMBER 2022

MASA : 11.15 PAGI – 1.15 PETANG (2 JAM)

Kertas ini mengandungi **SEMBILAN (9)** halaman bercetak.

Struktur (5 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:

This section consists of **FIVE (5)** questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi **LIMA (5)** soalan. Jawab **SEMUA** soalan.

QUESTION 1**SOALAN 1**

CLO1
C1

- (a) List **FIVE (5)** characteristics of typical organic compounds.
Senaraikan LIMA (5) ciri-ciri kebiasaan bagi sebatian organik.

[5 marks]

[5 markah]

CLO1
C2

- (b) Differentiate **FIVE (5)** properties between propane and propene as in Table 1.
Bezakan LIMA (5) ciri-ciri antara propane dan propena seperti di dalam Jadual 1.

Table 1: Properties of propane and propene

Jadual 1: Sifat propana dan propena

Properties <i>Ciri-ciri</i>	Propane <i>Propana</i>	Propene <i>Propena</i>
i) Carbon bonding <i>Ikatan Carbon</i>		
ii) Boiling point <i>Takat didih</i>		
iii) Reaction occur <i>Tindakbalas yang berlaku</i>		
iv) Reactivity <i>Kereaktifan</i>		
v) Saturation <i>Ketepuan</i>		

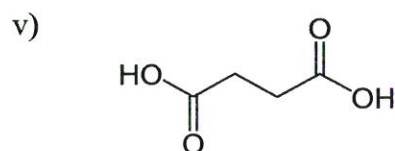
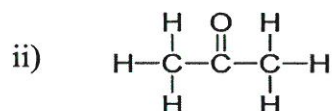
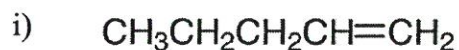
[5 marks]

[5 markah]

CLO1
C2

- (c) Identify each of the following compounds whether they are alkene, alcohol, aldehyde, ketone, or carboxylic acid:

Kenalpasti setiap sebatian berikut sama ada ianya alkena, alkohol, aldehid, keton, atau asid karboksilik:

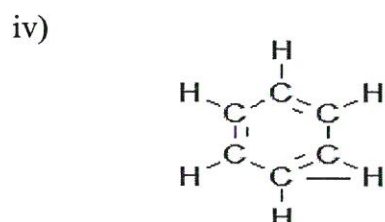
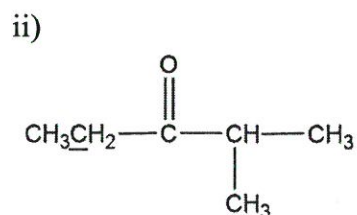


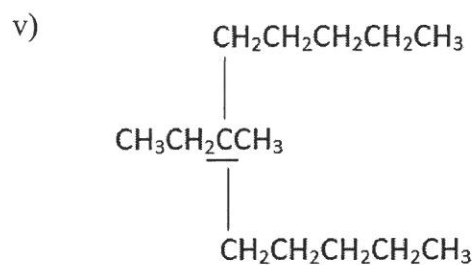
[5 marks]
[5 markah]

CLO1
C2

- (d) Based on the underlined carbon, classify whether they are primary (1°), secondary (2°), tertiary (3°) or quaternary (4°) carbon.

Berdasarkan karbon yang digariskan, kelaskan setiap berikut sama ada ianya karbon primer (1°), sekunder (2°), tertier (3°) atau kuartenar (4°).





[5 marks]

[5 markah]

QUESTION 2**SOALAN 2**CLO1
C1

- (a) State the functioning group of following compounds.

Nyatakan kumpulan berfungsi bagi sebatian berikut.

- i) 1,4-hexadiene
1,4-heksadiena
- ii) 2,2- dimethylpentanoic acid
2,2-dimetilpentanoik asid
- iii) 2-ethylheptanol
2-etilheptanol
- iv) 1-phenyl-1-methylcyclohexane
1-fenil-1-metilsikloheksana
- v) 3-chloro-3-methyl-1-butyne
3-kloro-3-metil-1-butina

[5 marks]

[5 markah]

CLO1
C2

- (b) Draw a structure for following compounds:
Lukiskan struktur bagi sebatian berikut:

- i) 4-ethyl-2,3,6-trimethyloctane
4-etil-2,3,6-trimetiloktana
- ii) 2-methylbut-1,3-diene
2-metilbut-1,3-diena

[5 marks]
[5 markah]

CLO1
C2

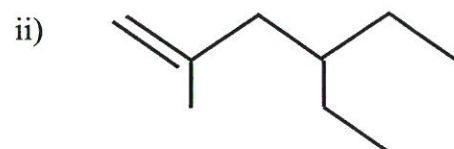
- (c) Draw a condensed structure formula for following substance:
Lukis struktur formula kondensasi bagi sebatian berikut:

- i) 2-chloro-4,5-dimethylheptane
2-kloro-4,5-dimetilheptana
- ii) 4-iodo-2,4-dimethylhexane
4-iodo-2,4-dimetilheksana

[5 marks]
[5 markah]

CLO1
C2

- (d) Determine IUPAC name for the following alkene:
Tentukan nama IUPAC bagi alkena berikut:



[5 marks]
[5 markah]

QUESTION 3

SOALAN 3

CLO1
C1

- (a) State **FIVE (5)** functions of alcohol in daily life.
*Nyatakan **LIMA (5)** kegunaan alkohol dalam kehidupan seharian.*

[5 marks]
[5 markah]

CLO1
C2

- (b) Differentiate between **TWO (2)** types of hydroxyl compounds.
*Bezakan antara **DUA (2)** jenis sebatian hidroksi.*

[5 marks]
[5 markah]

CLO1
C2

- (c) Draw a structural formula for the following compounds:
Lukiskan formula struktur bagi sebatian berikut:

- i) N,N-diethylethanamine
N,N-dietiletanamine
- ii) 3-chloro-4-methylhexanedioic acid
3-kloro-4-metilheksanadioik asid

[5 marks]
[5 markah]

CLO1
C2

- (d) Name the following compounds based on IUPAC nomenclature:
Namakan sebatian berikut berdasarkan penamaan IUPAC:

- i) 2-ethyl-4-methylpentanal
2-etil-4-metilpentanal
- ii) 5-chloroheptan-3-one
5-kloroheptan-3-one

[5 marks]
[5 markah]

QUESTION 4

SOALAN 4

CLO1
C1

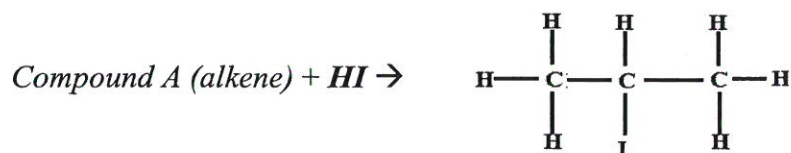
- (a) List **FIVE (5)** common types of reactions in organic chemistry.
Senaraikan LIMA (5) jenis tindak balas lazim dalam kimia organik.

[5 marks]

[5 markah]

CLO1
C2

- (b) Based on the following equation, answer the following questions.
Berdasarkan persamaan berikut, jawab soalan berikut.



- i) Draw and name the product according to IUPAC nomenclature system.

Lukis dan namakan produk mengikut sistem penamaan IUPAC.

[3 marks]

[3 markah]

- ii) Draw the structure of compound A if the reaction follows the Markonikov rules.

Lukiskan struktur sebatian A jika tindak balas adalah mengikut peraturan Markonikov.

[4 marks]

[4 markah]

CLO1
C2

- (c) There are two nucleophilic substitution mechanism's namely S_N1 and S_N2. Compare **FOUR (4)** differences between S_N1 and S_N2.

Terdapat dua mekanisme penggantian nukleofilik iaitu SN1 dan SN2. Bandingkan EMPAT (4) perbezaan antara SN1 dan SN2.

[8 marks]

[8 markah]

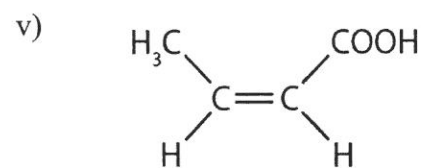
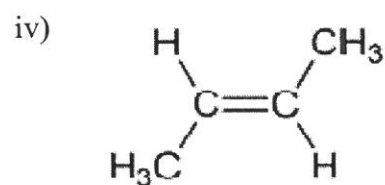
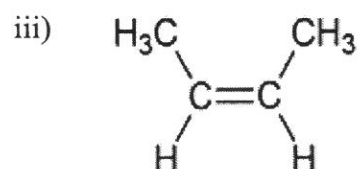
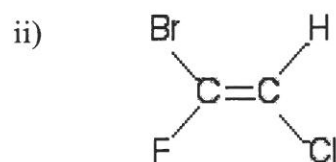
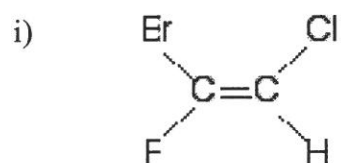
QUESTION 5

SOALAN 5

CLO1
C1

- (a) Identify each of the following compounds whether they are cis, trans, Z or E isomer based on the Cahn-Ingold Prelog System.

Kenalpasti setiap sebatian berikut sebagai isomer cis, trans, Z atau E berdasarkan Sistem Prelog Cahn-Ingold.



[5 marks]

[5 markah]

CLO1
C2

- (b) Isomers are molecules which have the same molecular formula but differ in the arrangement of their atoms.

Isomer ialah molekul yang mempunyai formula molekul yang sama tetapi berbeza dalam susunan atomnya.

- i) Explain **TWO (2)** types of structural isomers.

Terangkan DUA (2) jenis isomer struktur.

[3 marks]

[3 markah]

- ii) Draw and name **TWO (2)** chain isomers with molecular formula C_5H_{12} .

Lukiskan dan namakan DUA (2) isomer rantai dengan formula molekul C_5H_{12} .

[4 marks]

[4 markah]

CLO1
C2

- (c) Draw the geometrical isomers using Cahn-Ingold-Prelog naming system.

Lukiskan isomer geometri menggunakan sistem penamaan Cahn- Ingold Prelog.

- a) (E) - 3 - iodopent - 2 - ene

(E) - 3 - iodopent - 2 - ena

- b) trans - 2,3-dichloro - 1,2 - difluoroethene

trans - 2,3-dikloro - 1,2 - difluoroethena

- c) (E) - 2 - bromobut - 3 - enoic acid

(E) - 2 - bromobut - 3 - enoik asid

- d) (Z) - 4 - phenylpent - 2 - ene

(Z) - 4 - fenilpent - 2 - ena

[8 marks]

[8 markah]

SOALAN TAMAT